DRAFT

Specialist Children's Services – General Surgery of Childhood

Care Pathways and Tiered Levels of Care

General Surgery of Childhood

Emergency Case Management

The management of the following clinical cases need consideration:

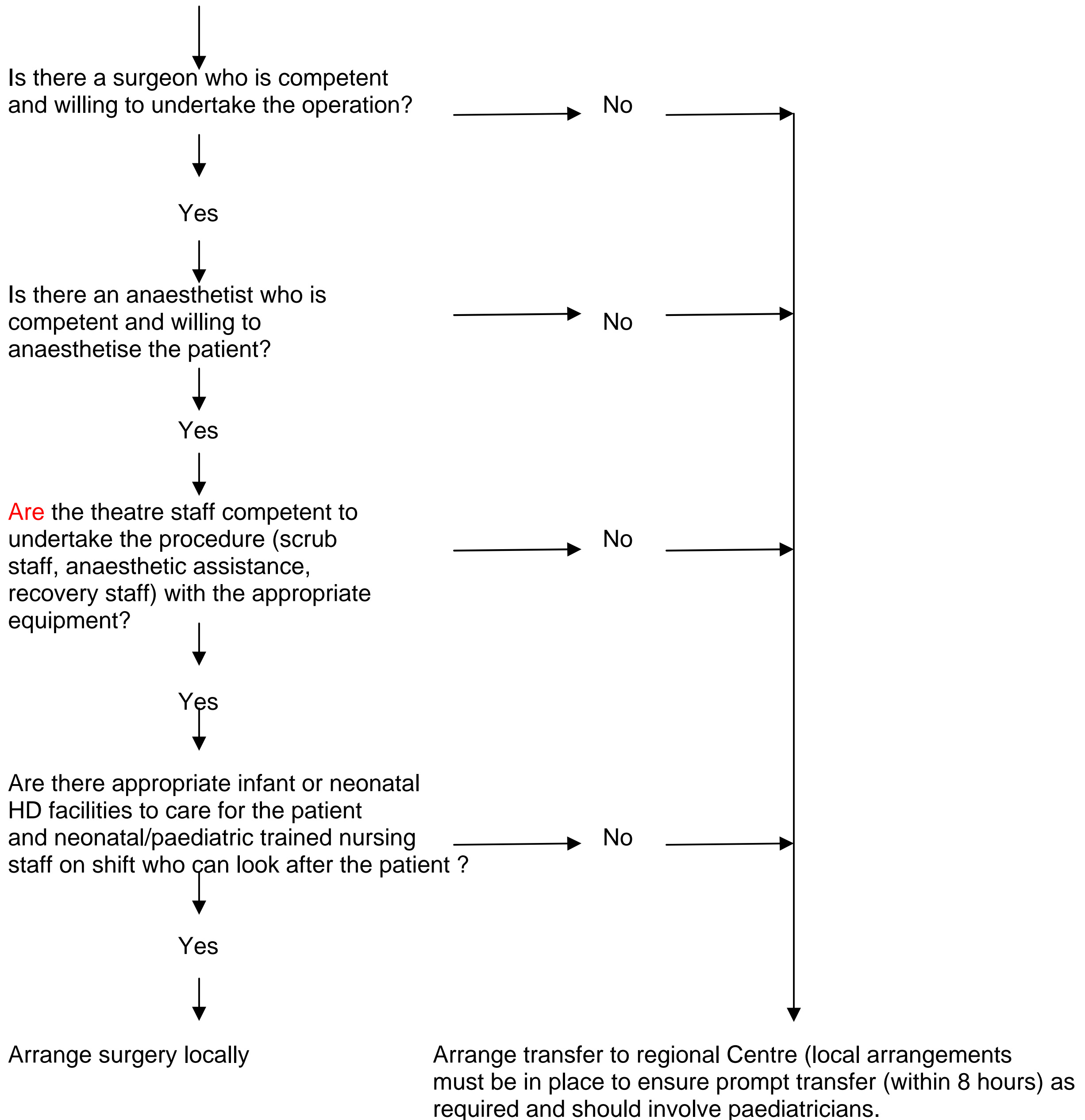
Age group	Cases
(Neonate	All neonates should be transferred to regional centres. All hospitals accepting neonatal admission should have the necessary team competencies to resuscitate a sick neonate. Local arrangements should be in place to facilitate transfer to the regional centre.)
Infants <1	pyloric stenosis intussusception
Children <5	appendicitis
Children <12	appendicitis testicular torsion
Children – all ages	acute abdomen with no diagnosis irreducible inguinal hernia abdominal/multi-system trauma

Some of the care pathways may be driven by availability of suitable imaging modalities as much as surgical or anaesthetic capability.

Suspected pyloric stenosis
Care pathway

Child presents with suspected pyloric stenosis

Make a diagnosis based on history, physical examination (including test feed) and, if necessary, abdominal ultrasound scan. Check U&E's and blood gases. Establish IV access and ensure adequate and appropriate IV fluid resuscitation (you will need to involve local paediatricians in this step.) IV fluid replacement should be 0.45% saline with 5% dextrose and 10-20 mmol KCl in every 500ml bag. Fluid replacement should commence at 125% maintenance.

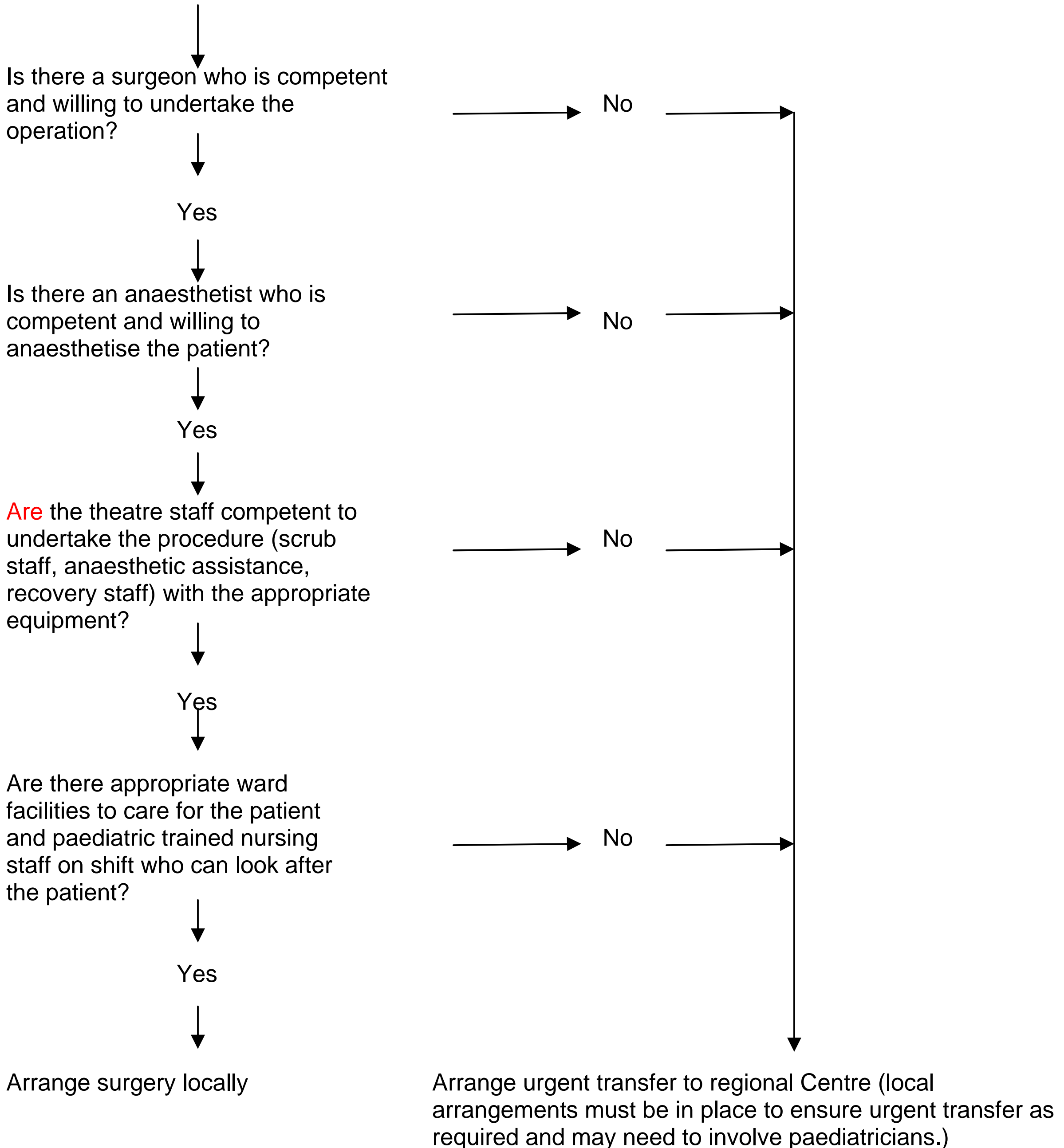


Arrange surgery locally

Arrange transfer to regional Centre (local arrangements must be in place to ensure prompt transfer (within 8 hours) as required and should involve paediatricians.

Suspected appendicitis (2)
Care pathway

Child presents with suspected appendicitis (age over 5 years)
Establish IV access and ensure adequate and appropriate IV fluid resuscitation and analgesia (you may need to involve local paediatricians in this step).



Arrange surgery locally

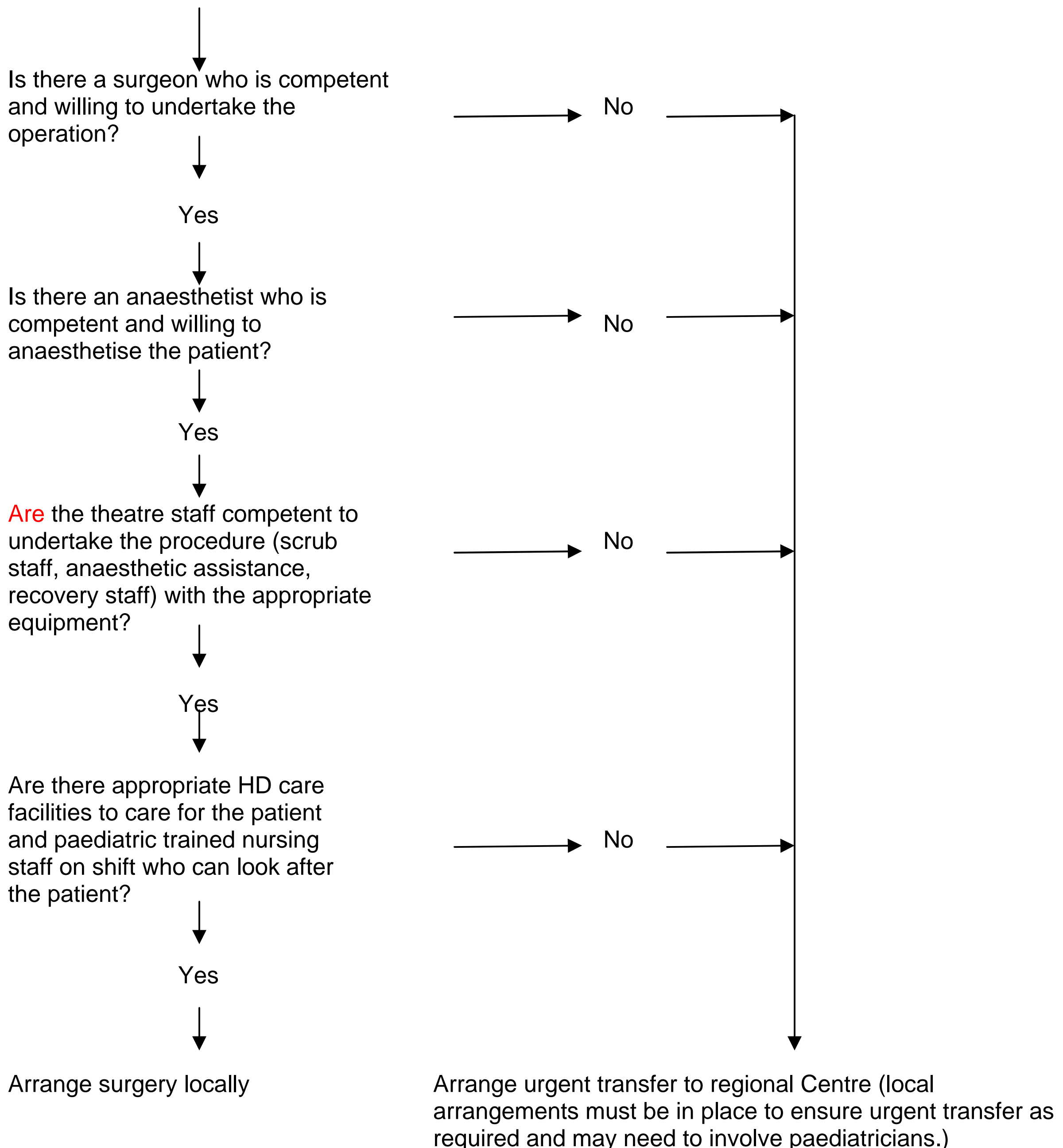
Arrange urgent transfer to regional Centre (local arrangements must be in place to ensure urgent transfer as required and may need to involve paediatricians.)

Suspected appendicitis (1)
Care pathway

Child presents with suspected appendicitis (age under 5 years)

Note: This is an uncommon diagnosis in this age group. Clinical features are often unclear and the appendix is frequently perforated at the time of initial presentation. Children with this diagnosis are frequently extremely unwell.

Establish IV access and ensure adequate and appropriate IV fluid resuscitation and analgesia (you will need to involve local paediatricians in this step).



Arrange surgery locally

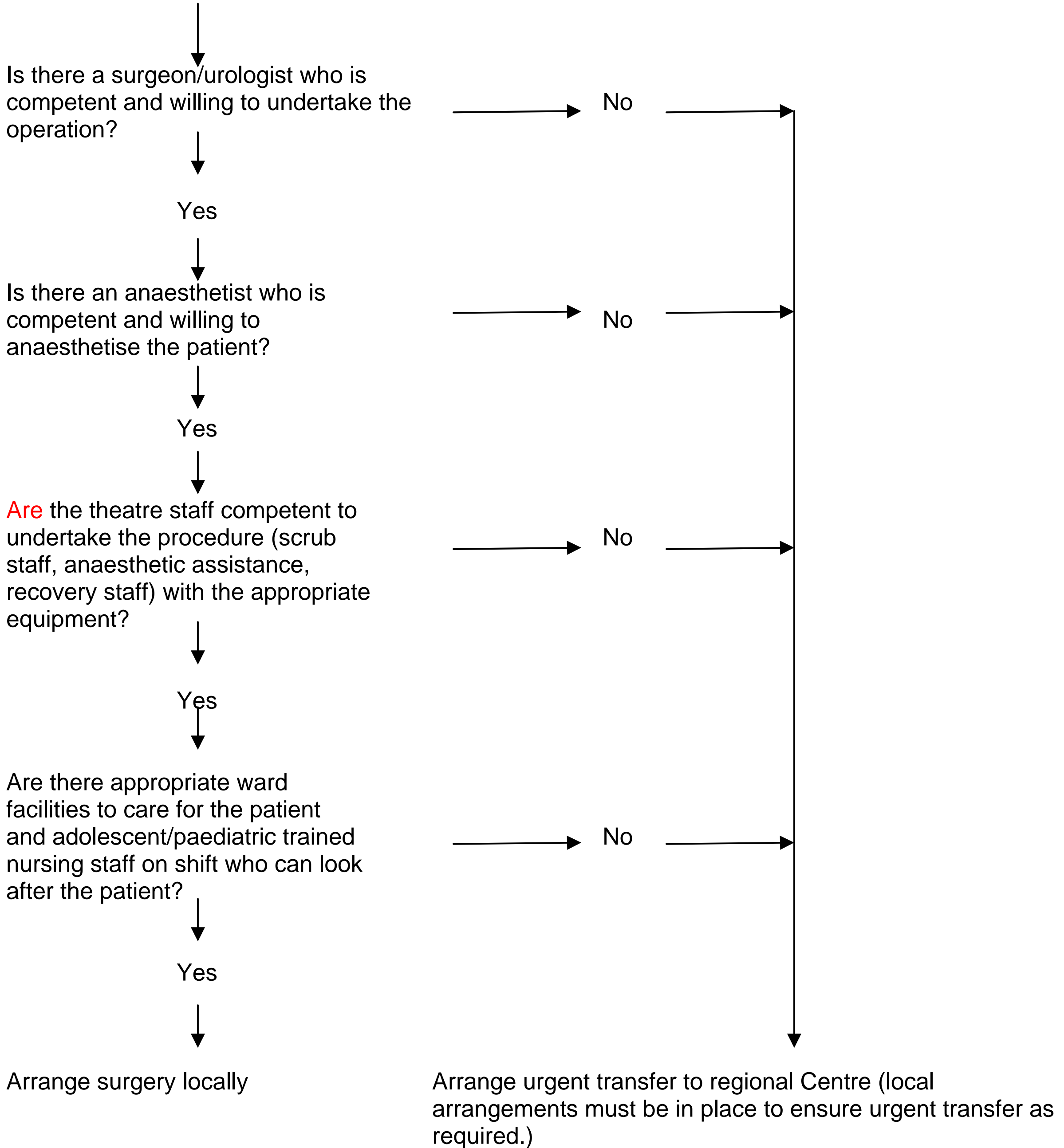
Arrange urgent transfer to regional Centre (local arrangements must be in place to ensure urgent transfer as required and may need to involve paediatricians.)

Suspected testicular torsion
Care pathway

Child presents with suspected testicular torsion (all ages except neonates)

NB: There is an imperative here to ensure surgery within 6 hours of symptoms. Any delay will result in testicular loss. Local surgery or immediate transfer is essential.

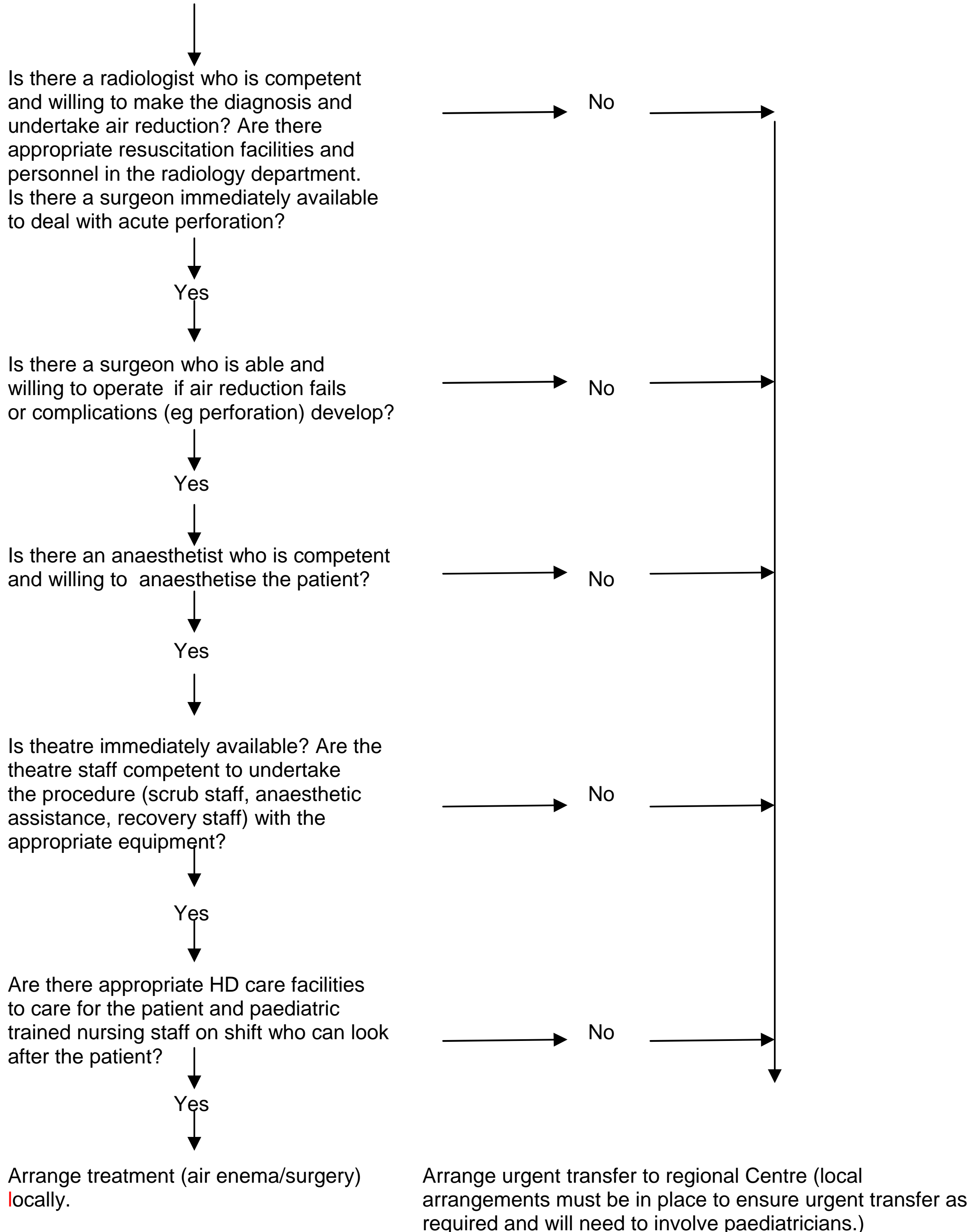
Ensure adequate analgesia (you may need to involve local paediatricians or anaesthetists in this step).



Suspected intussusception
Care pathway

Child presents with suspected intussusception

Establish IV access and ensure adequate and appropriate IV fluid resuscitation and analgesia (you will need to involve local paediatricians in this step).
Note: fluid resuscitation in this condition needs to be vigorous and may require 40 – 60 mls/kg body weight of crystalloid fluid. Careful monitoring during the resuscitation is essential.



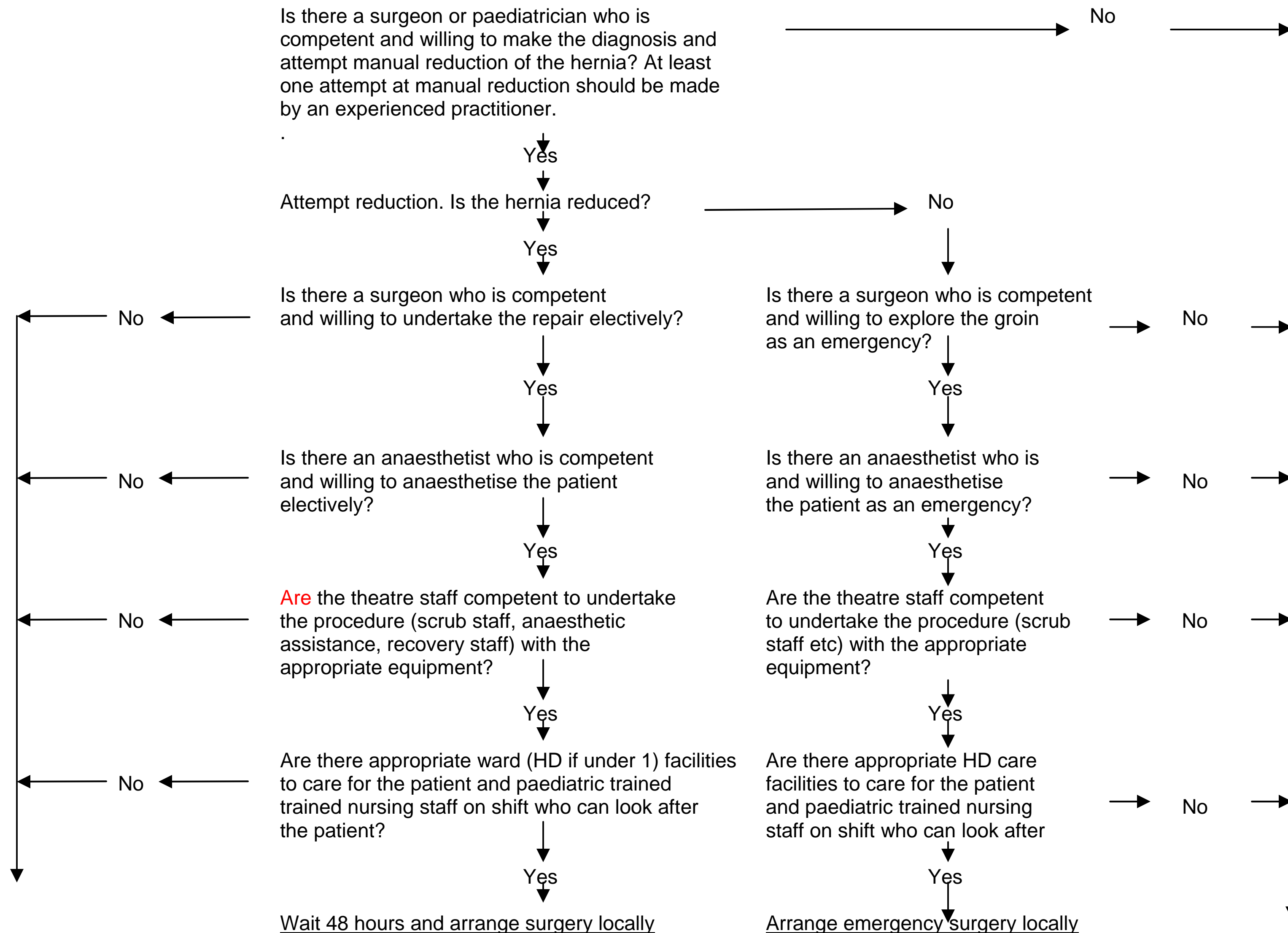
Arrange treatment (air enema/surgery) locally.

Arrange urgent transfer to regional Centre (local arrangements must be in place to ensure urgent transfer as required and will need to involve paediatricians.)

Irreducible inguinal hernia
Care pathway

Child presents with an irreducible inguinal hernia

Establish IV access and ensure adequate and appropriate IV fluid resuscitation and analgesia (you will need to involve local paediatricians in this step). A small dose of intravenous opiate (if the child is well resuscitated with appropriate personnel & monitoring) may facilitate manual reduction of the hernia.



Arrange elective transfer of the patient.

Arrange urgent transfer to Regional Centre (local arrangements must be in place to ensure urgent transfer as required and may need to involve paediatricians.)

Abdominal/multi-system trauma
Care pathway

Child presents with abdominal/multisystem trauma

Note: Use APLS/ATLS guidelines to assess and manage the child. Early consultation with the on-call Paediatric Surgical Team in the Regional Centre is essential.

(If trauma involves a head injury, look at head injury care pathway for assistance. In the event of a conflict between general trauma or neurotrauma, discuss best plan of action with colleagues in the regional centre. Do not perform a diagnostic peritoneal lavage without prior discussion with the Regional Paediatric Surgical Team.)

Is there a CT scanner and radiologist available?
Is the scan able to be interpreted?

Yes

Is there an anaesthetist who is competent and able to transfer the child to CT scan room?

Yes

Perform CT scan & discuss results with a paediatric surgeon. Does the CT scan show significant abdominal pathology?

No

Can local orthopaedic surgeons deal with bony injuries?

Yes

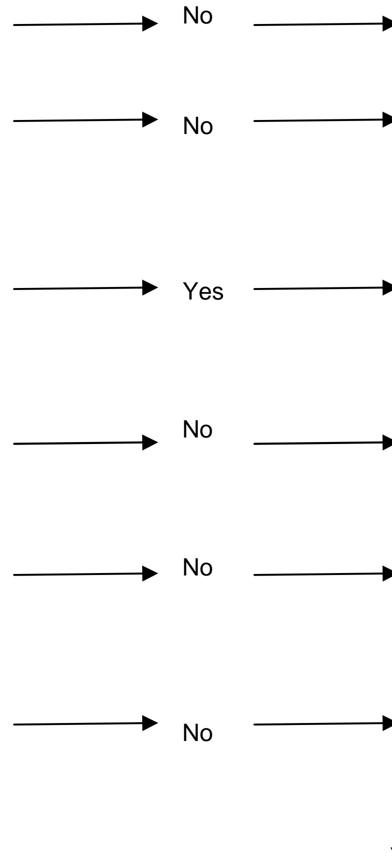
Are the theatre staff competent to undertake any orthopaedic procedure (scrub staff, anaesthetic assistance, recovery staff) with the appropriate equipment?

Yes

Are there appropriate HD facilities to care for the patient and paediatric trained nursing staff on shift who can look after the patient?

Yes

Arrange to admit and treat locally.



Arrange emergency transfer to regional paediatric surgery/orthopaedic surgery unit

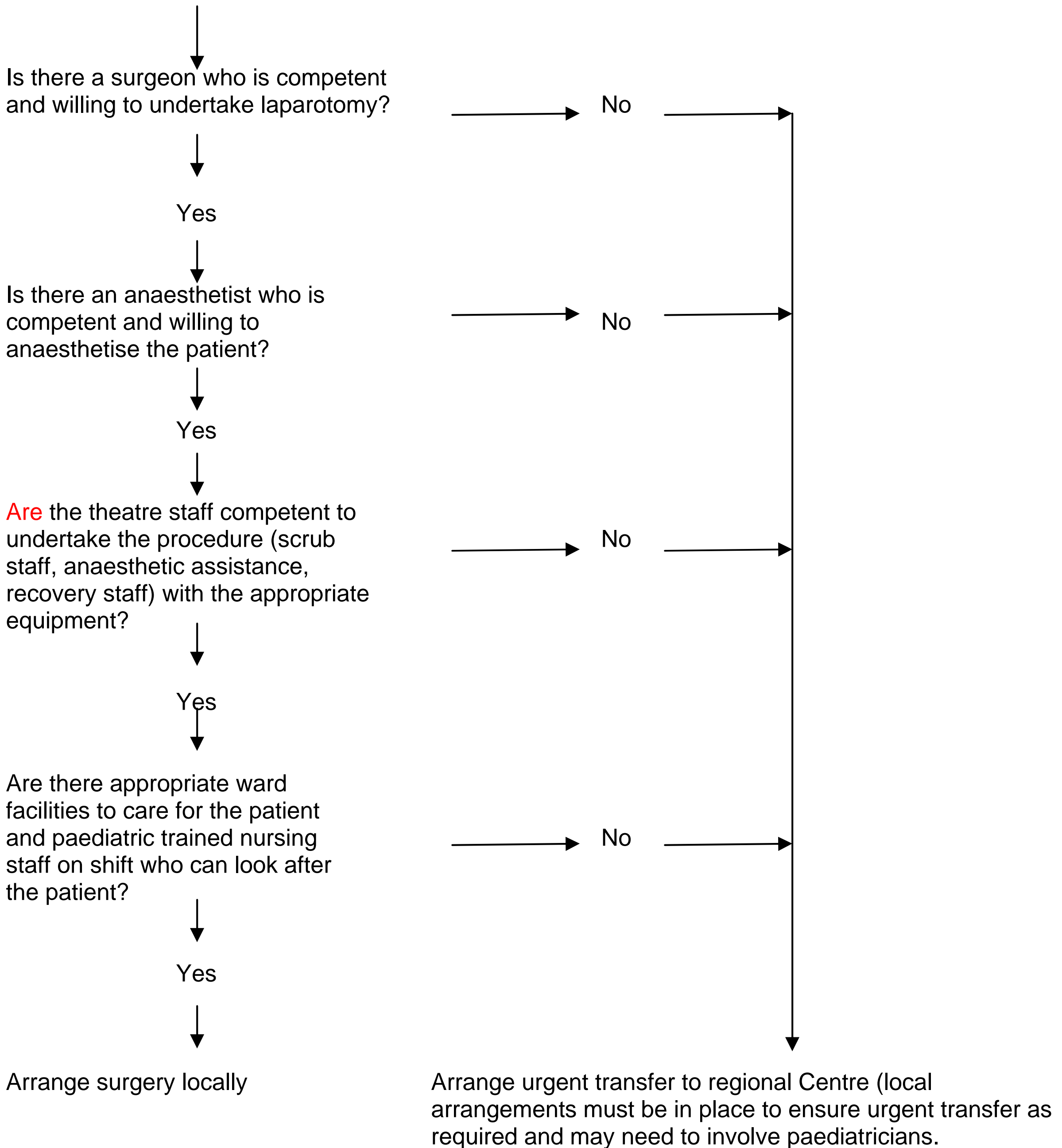
Local arrangements must be in place to ensure emergency transfer

Child with an acute abdomen but no diagnosis
Care pathway

Child presents with acute abdomen but no diagnosis

Notes: Establish IV access and ensure adequate and appropriate IV fluid resuscitation and analgesia (you must involve local paediatricians in this step.) Pass a nasogastric tube and arrange plain abdominal x-rays.

For children under the age of 5 years, consider early consultation with the Regional Paediatric Surgery Team and arrange urgent transfer. For children over the age of 5 years, consider local care



Arrange surgery locally

Arrange urgent transfer to regional Centre (local arrangements must be in place to ensure urgent transfer as required and may need to involve paediatricians.

Levels of care

Level of Care	Age	Example conditions	Supporting facilities/conditions and accompanying services
1 remote and rural	No age specified	Abscess, torsion tests(urgent uncomplicated with no co morbidity)	Experienced children's anaesthetist with appropriately certified and competent support staff. No significant in-patient stay envisaged
2	11-16 yrs	Appendicitis, torsion testis + elective conditions in this age group, trauma	No inpatient paediatric, paediatric section to A&E, Access to suitably trained or experienced paediatric nurses All staff have paediatric resuscitation accreditation Adolescent facilities
3	5-10yrs	Appendicitis, torsion testis, elective surgery, trauma	Paediatric A& E, Children's Nurses Immediate access to paediatrician Paediatric inpatient facilities Identified lead paediatric anaesthetist Lead general surgeon
4	1-5 yrs	Elective & emergency surgery in this age range eg. Hernia, orchidopexy	lead paediatric anaesthetist formalised link with specialist paediatric surgeon Paediatric HDU available In house paediatrics Lead general surgeon

* The levels are advisory and each region/NHS Board should indicate the level to which individual hospital should adhere.